having been presented in Applicants' response filed 22 December 2006 and, thus, will not be repeated. Applicants' response to the Examiner's arguments presented in the current Office Action in connection with this rejection are set forth herein below.

Response to Examiner's Arguments

In response to the rejection of Claims 1-8, 10, and 12-17 as being anticipated by, or in the alternative as being obvious over, the Hornung et al. patent, Applicants previously argued that, if the Hornung et al. patent does not teach a positive step of nitrogen addition, then it also does not specifically teach that the nitrogen present is endogenous or inherent, i.e. intrinsically present. In response to Applicants' assertion, the Examiner has expressed disagreement on the basis that *the reference does teach that nitrogen is present - albeit in small amounts at 0.02wt.%.* Applicants understand the Examiner's argument to be that the 0.02 wt.% nitrogen taught by the Hornung et al. patent is "intrinsic nitrogen," notwithstanding the fact that no such statement is made therein. Applicants respectfully urge that it is an improper extrapolation of a mere teaching of the presence of nitrogen, without any explicit explanation as to how the nitrogen got into the alloy, to conclude that the nitrogen is intrinsically present in the described alloy. Applicants respectfully urge that, at best, the reference is neutral as to how the nitrogen got into the alloy.

alloy having no endogenous nitrogen. It is the Examiner's position that nitrogen is intrinsically present in austenitic steel alloys at a non-zero amount. For the reasons already of record as set forth in Applicants' response of 22 December 2006, which reasons will not be repeated here, and for the reasons set forth herein below which are responsive to the Examiner's arguments set forth in the current Office Action, Applicants respectfully urge that the invention as claimed by Applicants is fully enabled by the specification of the subject application.

Claims 1-8, 10, and 12-17 have been rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over Hornung et al., U.S. Patent 6,300,001 B1 (hereinafter "the Hornung et al. patent"). This rejection is respectfully traversed. Applicants' arguments in response to this rejection are already of record, having been presented in Applicants' response filed 22 December 2006 and, thus, will not be repeated. Applicants' response to the Examiner's arguments presented in the current Office Action in connection with this rejection are set forth herein below.

Claims 9 and 11 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the Hornung et al. patent in view of Koncar et al., U.S. Patent 5,942,347 (hereinafter "the Koncar et al. patent"). This rejection is respectfully traversed. Applicants' arguments in response to this rejection are already of record,

reconsideration of the subject application, particularly in view of the following remarks.

The invention claimed by Applicants is *a polymer electrolyte membrane fuel cell stack* comprising a plurality of *substantially planar* fuel cell units, each of which comprises an anode electrode, a cathode electrode and a polymer electrolyte membrane disposed between the anode electrode and the cathode electrode. A metal bipolar plate is disposed between the anode electrode of one fuel cell unit and the cathode electrode of an adjacent fuel cell unit in the fuel cell stack. The metal bipolar plate comprises a chromium-nickel *austenitic* alloy having *a nitrogen content of zero*, wherein the chromium and the nickel, on a combined basis, comprise at least about 50% by weight of the alloy.

Claims 1-17 have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The Examiner indicates that the claims contain subject matter which is not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In particular, the Examiner indicates that the claimed "zero amount of nitrogen" appears to be drawn to an absence of nitrogen insofar as no nitrogen is added to the alloy mixture. The Examiner further indicates that the specification is not enabling for an austenitic steel

In the Office Action mailed 28 September 2006, the Examiner invited Applicants to submit evidence that the presently claimed austenitic alloy has zero, i.e. 0.00 wt. % of nitrogen (an invitation repeated in the current Office Action). In response to this invitation, Applicants filed a response on 22 December 2006 in which Applicants submitted a table from the ASM Specialty Handbook showing numerous stainless steels in which no nitrogen is indicated to be present. In response, the Examiner has argued that the table does not indicate stainless steels having a zero amount of nitrogen; rather, the Examiner has argued that the reference "at best shows that certain stainless steels have a "..." wt. % max." The Examiner further argues that to rely on "..." as being equal to 0.00 wt. % would be an improper extrapolation of what the reference actually teaches - that for the types of steels listed therein, the amount of nitrogen is "indeterminate". Applicants respectfully disagree.

Applicants respectfully urge that, if the amount of nitrogen or any other elements listed in the reference having an amount indicated to be "..." is indeterminate, presumably because it is so low, as indicated by the Examiner, then, in fact, the amount of that element present in the composition must be considered as zero. That is, if the amount of nitrogen present in the stainless steel is so low that it is indeterminate, i.e. cannot be measured, then the amount of nitrogen present must be considered to be zero. For it not to be zero as argued by the Examiner would mean

that producing a stainless steel having a zero amount of nitrogen is an impossibility since measurement of the difference between an alloy having 0.00 wt.% nitrogen and an alloy having "..." wt.% alloy is not possible. Regarding the issue of nitrogen, Applicants understand the Examiner's position to be that nitrogen is intrinsically present in all stainless steels and, thus, a stainless steel having a zero amount of nitrogen is not possible. Applicants respectfully urge that production of a stainless steel in a nitrogen-free atmosphere could result in a stainless steel having zero nitrogen. Applicants concede that, if the Examiner can show that producing a stainless steel having a zero amount of nitrogen is impossible, then the amount of nitrogen indicated by "..." is not zero. However, no such evidence has been proffered by the Examiner. Applicants further note that in the ASM reference, several stainless steels are indicated to have a "..." wt.% of Ni and/or Mo and/or S and/or P. Following the Examiner's reasoning as to the meaning of "...", Ni, Mo, S, and P, must be intrinsically present in all stainless steels as well. However, Hornung et al., U.S. Patent 6,300,001 B1, relied upon by the Examiner for rejection of the subject application clearly teaches alloys having 0.00 wt.% S and P (Col. 2, Table). Applicants respectfully urge that the Examiner's interpretation of the meaning of "...", i.e. indeterminate, in connection with the amount of S and P listed in connection with one of the alloys presented in the ASM reference is inconsistent with the explicit

teachings of the Hornung et al. patent as to the 0.00 wt.% of P and S able to be determined to be present in the Hornung et al. alloys. Applicants respectfully urge that, if the Examiner is going to take the position that "..." absolutely does not mean zero when it comes to the amounts of Ni, Mo, S, N, and P present in the stainless steels listed in the ASM reference, the burden is on the Examiner to clearly establish that achievement of a zero amount of each of these elements present in the listed stainless steels is not possible. Applicants further respectfully urge that the teachings of the Hornung et al. patent with respect to alloys having 0.00 wt. % P and S are clearly contrary to the Examiner's position. In the absence of a showing that stainless steels with zero amounts of nitrogen, P, S, Ni, and Mo cannot be produced, Applicants respectfully urge that if the amount of these elements in the listed stainless steels is so low that it cannot be measured, i.e. the amount is indeterminate as indicated by the Examiner, then the amounts listed as "..." of these elements present in the listed stainless steels must necessarily be considered to be zero. And, as previously presented by Applicants, at least one of the stainless steels listed in the ASM reference meets all of the requirements of Applicants' claimed invention.

Regarding the two prior art references cited by the Examiner in support of the proposition that nitrogen is intrinsically present in stainless steel alloys (Sawaragi et al. and Hiramatsu et al.), the Examiner argues that Applicants' previous

assertion that the higher concentrations of nitrogen, up to 1.0 wt.% in the steel alloys of the Hornung et al. patent, are the result of addition is contrary to what is taught by the Hiramatsu et al. patent. Applicants respectfully disagree. As previously stated, Applicants understand the Examiner's argument to be that there is an intrinsic amount of nitrogen present in all stainless steel alloys. Based upon the Examiner's assertion that the 0.02 wt.% nitrogen (the same amount present in the Hiramatsu et al. patent and above which the Examiner has indicated would constitute nitrogen addition) as taught by the Hornung et al. patent is not the result of addition and, thus, is representative of the intrinsic amount of nitrogen present in all stainless steel alloys, Applicants respectfully urge that any amount of nitrogen in excess of the intrinsic amount of nitrogen must necessarily be due to the addition of nitrogen, particularly absent any teachings by the cited prior art regarding steps to reduce the amount of nitrogen present.

The Examiner has again argued that the "zero amount of nitrogen" in the claimed stainless steel alloy referred to by Applicants means "zero amount of *added* nitrogen", which Applicants have previously argued goes beyond the plain meaning of the words of the claims as required by MPEP § 2111.01 *et seq.* In response to Applicants' argument, the Examiner cites Page 7, lines 10-13 of the specification of the subject application which states:

> "The addition of nitrogen is one means by which such stainless steel plates are imbued with corrosion resistant properties. We have found that by increasing the amount of nickel in the stainless steel bipolar plate and by eliminating nitrogen from the stainless steel composition, the amount of Cr corrosion is reduced."

The Examiner argues that this language is indicative of Applicants' intent that "zero amount of nitrogen" means "zero amount of *added* nitrogen" as it constitutes disclosure of a method to produce stainless steel alloys. Applicants respectfully urge that this language is merely an expression of a condition of the stainless steel alloy which produces the desired result and not an expression of a method to produce stainless steel as asserted by the Examiner. Applicants further respectfully urge that this language is not indicative of an intent by Applicants that "zero amount of nitrogen" be defined as meaning "zero amount of *added* nitrogen" and, at best, is not dispositive of the issue, particularly in view of the description at page 8 of the specification which states:

> "Nitrogen is conventionally employed in austenitic alloys as a means for enhancing strength (at the expense of formability) and as a means for preventing corrosion and pitting. Thus, it is indeed surprising and unexpected that the bi-polar separator plates of this invention exhibit superior resistance to corrosion and pitting in the acid reducing environment of the polymer electrolyte membrane fuel cell stack in spite of *the absence of nitrogen in the alloy. In addition, the absence of nitrogen in the alloy enhances the formability of the alloy* (emphasis added)."

This language, consistent with the language cited by the Examiner, indicates that it is known that the addition of nitrogen to stainless steel is a means for enhancing

strength and preventing corrosion and pitting of the stainless steel. This language then goes on to indicate the unexpected results of superior resistance to corrosion and pitting in an acid reducing environment "in spite of the *absence* (emphasis added) of nitrogen in the alloy." The language further points out enhancements to the formability of the alloy in "the absence of nitrogen in the alloy." Applicants respectfully urge that this language - "absence of nitrogen in the alloy" - clearly establishes the meaning of the term "zero amount of nitrogen" as used by Applicants in the subject application. That is, the clear meaning of the phrase *absence of nitrogen in the alloy* is an alloy with *no nitrogen*. Applicants further respectfully urge that *no nitrogen is equivalent to a zero amount of nitrogen*. If the phrase zero amount of nitrogen were interpreted to mean zero amount of *added* nitrogen as posited by the Examiner, the cited language, i.e. *absence of nitrogen* would have a meaning clearly contrary to its plain meaning.

Finally, the Examiner has stated:

> "In sum, as to paraphrase applicant's own words, 'in order to over come the rejection under 35 U.S.C. 112, first paragraph, as well as the rejections under 35 U.S.C. 102(e) and 35 U.S.C. 103(a), Applicants must present evidence that the presently claimed austenitic alloy has zero, i.e. 0.00% of nitrogen by weight of the alloy.'"

Applicants respectfully urge that these words do not express Applicants belief as to what is required to overcome the rejection of the subject application as suggested by

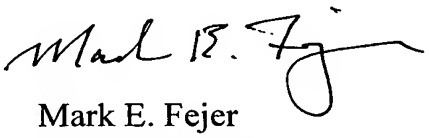
the Examiner. Rather, as set forth in Applicants' response filed 22 December 2006, these word represent Applicants' understanding of the Examiner's position. Applicants respectfully urge, for the reasons set forth herein above, that Applicants have presented ample evidence that the presently claimed austenitic alloy has zero nitrogen by weight of the alloy, including identification of one austenitic alloy in the ASM reference which meets all of the requirements of the claimed alloy.

Conclusion

Applicants intend to be fully responsive to the outstanding Office Action. If the Examiner detects any issue which the Examiner believes Applicants have not addressed in this response, Applicants urge the Examiner to contact the undersigned.

Applicants sincerely believe that this patent application is now in condition for allowance and, thus, respectfully request early allowance.

Respectfully submitted,



Mark E. Fejer
Regis. No. 34,817

Gas Technology Institute
1700 South Mount Prospect Road
Des Plaines, Illinois 60018
TEL (847) 768-0832; FAX (847) 768-0802